

Supporting Information for Publication:
Computation of Molecular Electron Affinities
using an Ensemble Density Functional Theory
Method

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1 Dyson's orbitals from Table 1 of the main article obtained with the 6-31G* basis set

Table S1: Electron attachment Dyson's orbitals calculated using the 6-31G* basis set. See legend to Table 1 of the main article for detail.

| Molecule | EKT-SSR-BH&HLYP | | RBH&HLYP | |
|--|-----------------|-----------------|--------------------|----------------------|
| | $-\epsilon_1^D$ | $-\epsilon_2^D$ | $-\epsilon_{LUMO}$ | $-\epsilon_{LUMO+1}$ |
| naphthalene | -0.27 | -1.10 | -0.26 | -1.09 |
| anthracene | 0.51 | -0.90 | 0.52 | -0.90 |
| tetracene | 1.04 | -0.77 | 1.05 | -0.77 |
| pentacene | 1.42 | -0.29 | 1.42 | -0.29 |
| pyrene | 0.38 | -0.54 | 0.39 | -0.54 |
| phenanthrene | -0.21 | -0.36 | -0.20 | -0.36 |
| perylene | 0.84 | -0.76 | 0.85 | -0.76 |
| picene | 0.10 | 0.04 | 0.11 | 0.04 |
| chrysene | 0.11 | -0.32 | 0.12 | -0.32 |
| fluoranthene | 0.64 | -0.74 | 0.65 | -0.74 |
| azulene | 0.66 | 0.13 | 0.72 | 0.10 |
| C ₂ H ₄ | -1.97 | -4.64 | -2.01 | -4.64 |
| C ₂ H ₃ F | -1.88 | -4.44 | -1.92 | -4.44 |
| 1,1-C ₂ H ₂ F ₂ | -1.89 | -4.46 | -1.84 | -4.40 |
| trans-C ₂ H ₂ F ₂ | -1.68 | -3.57 | -1.63 | -3.56 |
| cis-C ₂ H ₂ F ₂ | -1.75 | -3.56 | -1.71 | -3.55 |
| C ₂ HF ₃ | -1.68 | -3.32 | -1.62 | -3.28 |
| C ₂ F ₄ | -1.59 | -3.18 | -1.51 | -3.17 |
| pyridine | -0.79 | -1.11 | -0.82 | -1.09 |
| butadiene | -0.83 | -4.01 | -0.82 | -4.01 |
| 1,3-cyclohexadiene | -0.95 | -3.86 | -0.95 | -3.86 |
| furan | -2.04 | -3.77 | -2.01 | -3.76 |
| thiophene | -1.13 | -2.42 | -1.13 | -2.42 |
| MAD ^{a)} | 0.31 | | 0.31 | |

^{a)} Mean absolute deviation (in eV) from the experimental electron affinities reported in Table 1 of the main article.

2 Linear regression analysis of Eq. (6) of the main article

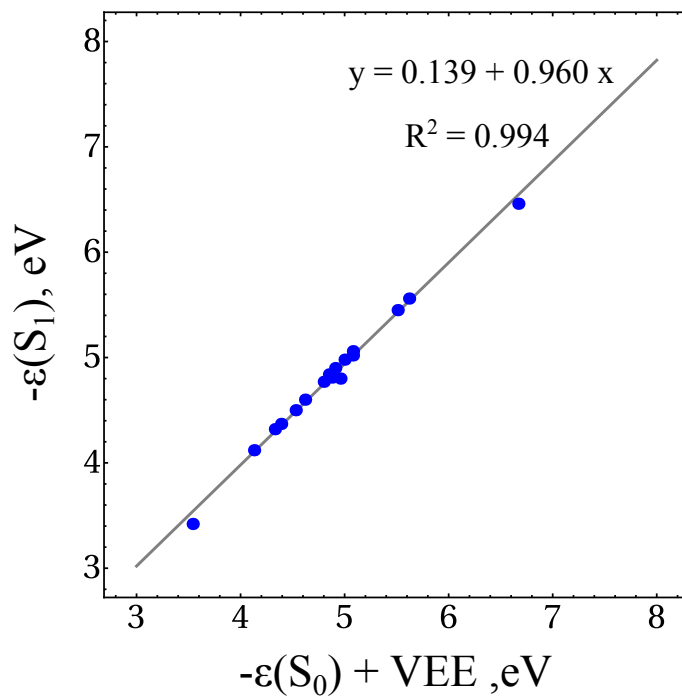


Figure S1: Linear regression analysis of Eq. (6) reported in the main article. Blue dots show the most positive electron affinities reported in Tables 1 and 2 of the main article.

3 Cartesian coordinates of all molecules studied in the main paper

Table S2: Geometries (in Å) of all the molecules reported in the main article. The geometries were optimized using the SSR-BH&HLYP/6-311G** method.

| Molecule | Atom | X | Y | Z |
|-------------|------|----------|-----------|-----------|
| naphthalene | C | 0.000000 | 1.237790 | 1.392371 |
| | C | 0.000000 | 2.415924 | 0.705121 |
| | C | 0.000000 | 2.415924 | -0.705121 |
| | C | 0.000000 | 1.237790 | -1.392371 |
| | C | 0.000000 | -1.237790 | -1.392371 |
| | C | 0.000000 | -2.415924 | -0.705121 |
| | C | 0.000000 | -2.415924 | 0.705121 |
| | C | 0.000000 | -1.237790 | 1.392371 |
| | C | 0.000000 | 0.000000 | 0.708734 |
| | C | 0.000000 | 0.000000 | -0.708734 |
| | H | 0.000000 | 1.233988 | 2.471178 |
| | H | 0.000000 | 3.353602 | 1.236820 |
| | H | 0.000000 | 3.353602 | -1.236820 |
| | H | 0.000000 | 1.233988 | -2.471178 |
| | H | 0.000000 | -1.233988 | -2.471178 |
| | H | 0.000000 | -3.353602 | -1.236820 |
| | H | 0.000000 | -3.353602 | 1.236820 |
| | H | 0.000000 | -1.233988 | 2.471178 |
| anthracene | C | 0.000000 | 3.633733 | 0.710816 |
| | C | 0.000000 | 3.633733 | -0.710816 |
| | C | 0.000000 | 2.464681 | -1.397677 |
| | C | 0.000000 | 2.464681 | 1.397677 |
| | H | 0.000000 | 2.461226 | -2.476342 |
| | H | 0.000000 | 2.461226 | 2.476342 |
| | C | 0.000000 | 1.213506 | -0.715174 |
| | C | 0.000000 | 1.213506 | 0.715174 |
| | C | 0.000000 | 0.000000 | 1.392890 |
| | C | 0.000000 | 0.000000 | -1.392890 |
| | H | 0.000000 | 0.000000 | 2.472272 |
| | H | 0.000000 | 0.000000 | -2.472272 |
| | C | 0.000000 | -1.213506 | 0.715174 |
| | C | 0.000000 | -1.213506 | -0.715174 |
| | C | 0.000000 | -2.464681 | -1.397677 |
| | C | 0.000000 | -2.464681 | 1.397677 |
| | H | 0.000000 | -2.461226 | -2.476342 |

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Table S2 – Continued from previous page

| Molecule | Atom | X | Y | Z |
|-----------|------|----------|-----------|-----------|
| tetracene | H | 0.000000 | -2.461226 | 2.476342 |
| | C | 0.000000 | -3.633733 | -0.710816 |
| | C | 0.000000 | -3.633733 | 0.710816 |
| | H | 0.000000 | -4.573626 | 1.238487 |
| | H | 0.000000 | -4.573626 | -1.238487 |
| | H | 0.000000 | 4.573626 | 1.238487 |
| | H | 0.000000 | 4.573626 | -1.238487 |
| | C | 0.000000 | 4.852890 | 0.713724 |
| | C | 0.000000 | 4.852890 | -0.713724 |
| | C | 0.000000 | 3.688203 | -1.400768 |
| | C | 0.000000 | 3.688203 | 1.400768 |
| | H | 0.000000 | 3.685131 | -2.479376 |
| | H | 0.000000 | 3.685131 | 2.479376 |
| | C | 0.000000 | 2.430470 | -0.719272 |
| | C | 0.000000 | 2.430470 | 0.719272 |
| | C | 0.000000 | 1.228085 | 1.395959 |
| | C | 0.000000 | 1.228085 | -1.395959 |
| | H | 0.000000 | 1.227713 | 2.475197 |
| | H | 0.000000 | 1.227713 | -2.475197 |
| | C | 0.000000 | 0.000000 | 0.718326 |
| | C | 0.000000 | 0.000000 | -0.718326 |
| | C | 0.000000 | -1.228085 | -1.395959 |
| | C | 0.000000 | -1.228085 | 1.395959 |
| | H | 0.000000 | -1.227713 | -2.475197 |
| | H | 0.000000 | -1.227713 | 2.475197 |
| | C | 0.000000 | -2.430470 | -0.719272 |
| | C | 0.000000 | -2.430470 | 0.719272 |
| | C | 0.000000 | -3.688203 | 1.400768 |
| | C | 0.000000 | -3.688203 | -1.400768 |
| | H | 0.000000 | -3.685131 | 2.479376 |
| | H | 0.000000 | -3.685131 | -2.479376 |
| | C | 0.000000 | -4.852890 | 0.713724 |
| | C | 0.000000 | -4.852890 | -0.713724 |
| | H | 0.000000 | -5.793913 | -1.239391 |
| | H | 0.000000 | -5.793913 | 1.239391 |
| | H | 0.000000 | 5.793913 | -1.239391 |
| | H | 0.000000 | 5.793913 | 1.239391 |
| pentacene | C | 0.000000 | 4.910187 | 1.402452 |
| | C | 0.000000 | 4.910187 | -1.402452 |
| | H | 0.000000 | 4.907386 | 2.481048 |
| | H | 0.000000 | 4.907386 | -2.481048 |
| | C | 0.000000 | 6.072542 | 0.715384 |

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Table S2 – Continued from previous page

| Molecule | Atom | X | Y | Z |
|----------|------|----------|-----------|-----------|
| | C | 0.000000 | 6.072542 | -0.715384 |
| | C | 0.000000 | 3.649026 | 0.721715 |
| | C | 0.000000 | 3.649026 | -0.721715 |
| | C | 0.000000 | 2.452349 | -1.397886 |
| | C | 0.000000 | 2.452349 | 1.397886 |
| | H | 0.000000 | 2.452038 | -2.477088 |
| | H | 0.000000 | 2.452038 | 2.477088 |
| | C | 0.000000 | 1.216190 | -0.721019 |
| | C | 0.000000 | 1.216190 | 0.721019 |
| | C | 0.000000 | 0.000000 | 1.397947 |
| | C | 0.000000 | 0.000000 | -1.397947 |
| | H | 0.000000 | 0.000000 | 2.477037 |
| | H | 0.000000 | 0.000000 | -2.477037 |
| | C | 0.000000 | -1.216190 | 0.721019 |
| | C | 0.000000 | -1.216190 | -0.721019 |
| | C | 0.000000 | -2.452349 | -1.397886 |
| | C | 0.000000 | -2.452349 | 1.397886 |
| | H | 0.000000 | -2.452038 | -2.477088 |
| | H | 0.000000 | -2.452038 | 2.477088 |
| | C | 0.000000 | -3.649026 | -0.721715 |
| | C | 0.000000 | -3.649026 | 0.721715 |
| | C | 0.000000 | -4.910187 | 1.402452 |
| | C | 0.000000 | -4.910187 | -1.402452 |
| | H | 0.000000 | -4.907386 | 2.481048 |
| | H | 0.000000 | -4.907386 | -2.481048 |
| | C | 0.000000 | -6.072542 | 0.715384 |
| | C | 0.000000 | -6.072542 | -0.715384 |
| | H | 0.000000 | 7.014266 | -1.239703 |
| | H | 0.000000 | 7.014266 | 1.239703 |
| | H | 0.000000 | -7.014266 | -1.239703 |
| | H | 0.000000 | -7.014266 | 1.239703 |
| pyrene | C | 0.000000 | -3.498843 | 0.000000 |
| | C | 0.000000 | -2.812738 | 1.202518 |
| | C | 0.000000 | -1.420025 | 1.224881 |
| | C | 0.000000 | -0.711128 | 0.000000 |
| | C | 0.000000 | -1.420025 | -1.224881 |
| | C | 0.000000 | -2.812738 | -1.202518 |
| | C | 0.000000 | -0.673612 | 2.449111 |
| | C | 0.000000 | 0.711128 | 0.000000 |
| | C | 0.000000 | 1.420025 | 1.224881 |
| | C | 0.000000 | 0.673612 | 2.449111 |
| | C | 0.000000 | 2.812738 | 1.202518 |
| | H | 0.000000 | 3.355413 | 2.135149 |

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Table S2 – Continued from previous page

| Molecule | Atom | X | Y | Z |
|--------------|------|-----------|-----------|-----------|
| phenanthrene | C | 0.000000 | 3.498843 | 0.000000 |
| | C | 0.000000 | 2.812738 | -1.202518 |
| | C | 0.000000 | 1.420025 | -1.224881 |
| | H | 0.000000 | -1.218665 | 3.379393 |
| | H | 0.000000 | -4.576609 | 0.000000 |
| | H | 0.000000 | -3.355413 | 2.135149 |
| | H | 0.000000 | -3.355413 | -2.135149 |
| | H | 0.000000 | 1.218665 | 3.379393 |
| | H | 0.000000 | 4.576609 | 0.000000 |
| | H | 0.000000 | 3.355413 | -2.135149 |
| | C | 0.000000 | 0.673612 | -2.449111 |
| | C | 0.000000 | -0.673612 | -2.449111 |
| | H | 0.000000 | 1.218665 | -3.379393 |
| | H | 0.000000 | -1.218665 | -3.379393 |
| | C | 0.000000 | -3.537068 | -0.293828 |
| | C | 0.000000 | -2.819419 | 0.872379 |
| | C | 0.000000 | -1.413906 | 0.857107 |
| | C | 0.000000 | -0.725895 | -0.375896 |
| | C | 0.000000 | -1.490243 | -1.556362 |
| | C | 0.000000 | -2.861218 | -1.518792 |
| | C | 0.000000 | -0.673161 | 2.080612 |
| | C | 0.000000 | 0.725895 | -0.375896 |
| | C | 0.000000 | 1.413906 | 0.857107 |
| | C | 0.000000 | 0.673161 | 2.080612 |
| | C | 0.000000 | 2.819419 | 0.872379 |
| | H | 0.000000 | 3.327126 | 1.824451 |
| | C | 0.000000 | 3.537068 | -0.293828 |
| | C | 0.000000 | 2.861218 | -1.518792 |
| | C | 0.000000 | 1.490243 | -1.556362 |
| perylene | H | 0.000000 | -1.220016 | 3.010006 |
| | H | 0.000000 | -4.614633 | -0.270737 |
| | H | 0.000000 | -3.327126 | 1.824451 |
| | H | 0.000000 | -1.000997 | -2.514928 |
| | H | 0.000000 | -3.420008 | -2.440117 |
| | H | 0.000000 | 1.220016 | 3.010006 |
| | H | 0.000000 | 4.614633 | -0.270737 |
| | H | 0.000000 | 3.420008 | -2.440117 |
| | H | 0.000000 | 1.000997 | -2.514928 |
| | C | -2.408625 | 1.468456 | 0.000000 |
| | C | -1.242413 | 0.736501 | 0.000000 |
| | C | 0.000000 | 1.433201 | 0.000000 |
| | C | 0.000000 | 2.853478 | 0.000000 |

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Table S2 – Continued from previous page

| Molecule | Atom | X | Y | Z |
|----------|------|-----------|-----------|-----------|
| | C | -1.225372 | 3.551924 | 0.000000 |
| | C | -2.404604 | 2.869323 | 0.000000 |
| | H | -3.361484 | 0.970270 | 0.000000 |
| | C | 1.242413 | 0.736501 | 0.000000 |
| | C | 1.225372 | 3.551924 | 0.000000 |
| | H | -1.208936 | 4.630066 | 0.000000 |
| | H | -3.343177 | 3.399274 | 0.000000 |
| | C | 2.404604 | 2.869323 | 0.000000 |
| | C | 2.408625 | 1.468456 | 0.000000 |
| | H | 1.208936 | 4.630066 | 0.000000 |
| | H | 3.343177 | 3.399274 | 0.000000 |
| | H | 3.361484 | 0.970270 | 0.000000 |
| | C | -2.404604 | -2.869323 | 0.000000 |
| | C | -1.225372 | -3.551924 | 0.000000 |
| | C | 0.000000 | -2.853478 | 0.000000 |
| | C | 0.000000 | -1.433201 | 0.000000 |
| | C | -1.242413 | -0.736501 | 0.000000 |
| | C | -2.408625 | -1.468456 | 0.000000 |
| | H | 1.208936 | -4.630066 | 0.000000 |
| | H | -3.343177 | -3.399274 | 0.000000 |
| | H | -1.208936 | -4.630066 | 0.000000 |
| | C | 1.225372 | -3.551924 | 0.000000 |
| | C | 1.242413 | -0.736501 | 0.000000 |
| | H | -3.361484 | -0.970270 | 0.000000 |
| | C | 2.408625 | -1.468456 | 0.000000 |
| | C | 2.404604 | -2.869323 | 0.000000 |
| | H | 3.361484 | -0.970270 | 0.000000 |
| | H | 3.343177 | -3.399274 | 0.000000 |
| picene | C | 0.000000 | -5.683809 | -0.381267 |
| | C | 0.000000 | -4.969898 | 0.785261 |
| | C | 0.000000 | -3.562918 | 0.771490 |
| | C | 0.000000 | -2.870062 | -0.457961 |
| | C | 0.000000 | -3.634258 | -1.641719 |
| | C | 0.000000 | -5.003845 | -1.606494 |
| | C | 0.000000 | -2.817980 | 1.983887 |
| | C | 0.000000 | -1.422899 | -0.453372 |
| | C | 0.000000 | -0.719257 | 0.762277 |
| | C | 0.000000 | -1.468455 | 1.980246 |
| | C | 0.000000 | 0.719257 | 0.762277 |
| | C | 0.000000 | 1.422899 | -0.453372 |
| | C | 0.000000 | 0.678116 | -1.656705 |
| | C | 0.000000 | -0.678116 | -1.656705 |
| | H | 0.000000 | -3.356143 | 2.918942 |

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Table S2 – Continued from previous page

| Molecule | Atom | X | Y | Z |
|----------|------|-----------|-----------|-----------|
| | H | 0.000000 | -6.761441 | -0.361410 |
| | H | 0.000000 | -5.477129 | 1.737530 |
| | H | 0.000000 | -3.146211 | -2.600247 |
| | H | 0.000000 | -5.560331 | -2.529493 |
| | H | 0.000000 | -0.955376 | 2.924015 |
| | H | 0.000000 | 1.187853 | -2.603203 |
| | H | 0.000000 | -1.187853 | -2.603203 |
| | C | 0.000000 | 2.870062 | -0.457961 |
| | C | 0.000000 | 3.562918 | 0.771490 |
| | C | 0.000000 | 2.817980 | 1.983887 |
| | C | 0.000000 | 1.468455 | 1.980246 |
| | H | 0.000000 | 3.356143 | 2.918942 |
| | H | 0.000000 | 0.955376 | 2.924015 |
| | C | 0.000000 | 3.634258 | -1.641719 |
| | C | 0.000000 | 5.003845 | -1.606494 |
| | C | 0.000000 | 5.683809 | -0.381267 |
| | C | 0.000000 | 4.969898 | 0.785261 |
| | H | 0.000000 | 3.146211 | -2.600247 |
| | H | 0.000000 | 5.560331 | -2.529493 |
| | H | 0.000000 | 6.761441 | -0.361410 |
| | H | 0.000000 | 5.477129 | 1.737530 |
| chrysene | C | -2.408625 | 1.468456 | 0.000000 |
| | C | -1.242413 | 0.736501 | 0.000000 |
| | C | 0.000000 | 1.433201 | 0.000000 |
| | C | 0.000000 | 2.853478 | 0.000000 |
| | C | -1.225372 | 3.551924 | 0.000000 |
| | C | -2.404604 | 2.869323 | 0.000000 |
| | H | -3.361484 | 0.970270 | 0.000000 |
| | C | 1.242413 | 0.736501 | 0.000000 |
| | C | 1.225372 | 3.551924 | 0.000000 |
| | H | -1.208936 | 4.630066 | 0.000000 |
| | H | -3.343177 | 3.399274 | 0.000000 |
| | C | 2.404604 | 2.869323 | 0.000000 |
| | C | 2.408625 | 1.468456 | 0.000000 |
| | H | 1.208936 | 4.630066 | 0.000000 |
| | H | 3.343177 | 3.399274 | 0.000000 |
| | H | 3.361484 | 0.970270 | 0.000000 |
| | C | -2.404604 | -2.869323 | 0.000000 |
| | C | -1.225372 | -3.551924 | 0.000000 |
| | C | 0.000000 | -2.853478 | 0.000000 |
| | C | 0.000000 | -1.433201 | 0.000000 |
| | C | -1.242413 | -0.736501 | 0.000000 |
| | C | -2.408625 | -1.468456 | 0.000000 |

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Table S2 – Continued from previous page

| Molecule | Atom | X | Y | Z |
|--------------|------|-----------|-----------|----------|
| fluoranthene | H | 1.208936 | -4.630066 | 0.000000 |
| | H | -3.343177 | -3.399274 | 0.000000 |
| | H | -1.208936 | -4.630066 | 0.000000 |
| | C | 1.225372 | -3.551924 | 0.000000 |
| | C | 1.242413 | -0.736501 | 0.000000 |
| | H | -3.361484 | -0.970270 | 0.000000 |
| | C | 2.408625 | -1.468456 | 0.000000 |
| | C | 2.404604 | -2.869323 | 0.000000 |
| | H | 3.361484 | -0.970270 | 0.000000 |
| | H | 3.343177 | -3.399274 | 0.000000 |
| | C | -2.408625 | 1.468456 | 0.000000 |
| | C | -1.242413 | 0.736501 | 0.000000 |
| | C | 0.000000 | 1.433201 | 0.000000 |
| | C | 0.000000 | 2.853478 | 0.000000 |
| | C | -1.225372 | 3.551924 | 0.000000 |
| | C | -2.404604 | 2.869323 | 0.000000 |
| | H | -3.361484 | 0.970270 | 0.000000 |
| | C | 1.242413 | 0.736501 | 0.000000 |
| | C | 1.225372 | 3.551924 | 0.000000 |
| | H | -1.208936 | 4.630066 | 0.000000 |
| | H | -3.343177 | 3.399274 | 0.000000 |
| | C | 2.404604 | 2.869323 | 0.000000 |
| | C | 2.408625 | 1.468456 | 0.000000 |
| | H | 1.208936 | 4.630066 | 0.000000 |
| | H | 3.343177 | 3.399274 | 0.000000 |
| | H | 3.361484 | 0.970270 | 0.000000 |
| | C | -2.404604 | -2.869323 | 0.000000 |
| | C | -1.225372 | -3.551924 | 0.000000 |
| | C | 0.000000 | -2.853478 | 0.000000 |
| | C | 0.000000 | -1.433201 | 0.000000 |
| | C | -1.242413 | -0.736501 | 0.000000 |
| | C | -2.408625 | -1.468456 | 0.000000 |
| | H | 1.208936 | -4.630066 | 0.000000 |
| | H | -3.343177 | -3.399274 | 0.000000 |
| | H | -1.208936 | -4.630066 | 0.000000 |
| | C | 1.225372 | -3.551924 | 0.000000 |
| | C | 1.242413 | -0.736501 | 0.000000 |
| | H | -3.361484 | -0.970270 | 0.000000 |
| | C | 2.408625 | -1.468456 | 0.000000 |
| | C | 2.404604 | -2.869323 | 0.000000 |
| | H | 3.361484 | -0.970270 | 0.000000 |
| | H | 3.343177 | -3.399274 | 0.000000 |
| azulene | | | | |

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Table S2 – Continued from previous page

| Molecule | Atom | X | Y | Z |
|---|------|-----------|-----------|-----------|
| C_2H_4 | C | 0.000000 | 0.000000 | -2.505949 |
| | C | 0.000000 | -1.263159 | -1.914657 |
| | C | 0.000000 | -1.584690 | -0.535873 |
| | C | 0.000000 | 1.263159 | -1.914657 |
| | C | 0.000000 | -0.733741 | 0.520585 |
| | C | 0.000000 | 1.584690 | -0.535873 |
| | C | 0.000000 | 0.733741 | 0.520585 |
| | H | 0.000000 | 0.000000 | -3.615872 |
| | H | 0.000000 | -2.141954 | -2.590022 |
| | H | 0.000000 | -2.670249 | -0.306783 |
| | H | 0.000000 | 2.141954 | -2.590022 |
| | H | 0.000000 | 2.670249 | -0.306783 |
| | C | 0.000000 | -1.136561 | 1.921358 |
| | H | 0.000000 | -2.173004 | 2.251274 |
| | C | 0.000000 | 0.000000 | 2.708171 |
| | H | 0.000000 | 0.000000 | 3.796664 |
| | C | 0.000000 | 1.136561 | 1.921358 |
| | H | 0.000000 | 2.173004 | 2.251274 |
| $\text{C}_2\text{H}_3\text{F}$ | C | 0.000000 | 0.000000 | 0.659674 |
| | C | 0.000000 | 0.000000 | -0.659674 |
| | H | 0.000000 | 0.917277 | 1.224194 |
| | H | 0.000000 | -0.917277 | 1.224194 |
| | H | 0.000000 | 0.917277 | -1.224194 |
| | H | 0.000000 | -0.917277 | -1.224194 |
| 1,1- $\text{C}_2\text{H}_2\text{F}_2$ | C | -0.006039 | 0.428293 | 0.000000 |
| | C | 1.165811 | -0.153067 | 0.000000 |
| | F | -1.148212 | -0.267170 | 0.000000 |
| | H | -0.179762 | 1.489041 | 0.000000 |
| | H | 1.257956 | -1.224314 | 0.000000 |
| | H | 2.056146 | 0.447217 | 0.000000 |
| E-1,2- $\text{C}_2\text{H}_2\text{F}_2$ | C | 0.000000 | 0.000000 | 1.366759 |
| | C | 0.000000 | 0.000000 | 0.069479 |
| | H | 0.000000 | 0.929658 | 1.900280 |
| | H | 0.000000 | -0.929658 | 1.900280 |
| | F | 0.000000 | 1.073286 | -0.689888 |
| | F | 0.000000 | -1.073286 | -0.689888 |
| | C | -0.391817 | 0.525462 | 0.000000 |
| | C | 0.391817 | -0.525462 | 0.000000 |
| | F | 0.123791 | 1.752876 | 0.000000 |
| | F | -0.123791 | -1.752876 | 0.000000 |

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Table S2 – Continued from previous page

| Molecule | Atom | X | Y | Z |
|--|------|-----------|-----------|-----------|
| Z-1,2-C ₂ H ₂ F ₂ | H | -1.464760 | 0.489910 | 0.000000 |
| | H | 1.464760 | -0.489910 | 0.000000 |
| | C | 0.000000 | 0.655882 | 0.571132 |
| | C | 0.000000 | -0.655882 | 0.571132 |
| | F | 0.000000 | 1.373157 | -0.544661 |
| | F | 0.000000 | -1.373157 | -0.544661 |
| | H | 0.000000 | 1.233825 | 1.475152 |
| | H | 0.000000 | -1.233825 | 1.475152 |
| C ₂ HF ₃ | C | -0.006784 | 0.420808 | 0.000000 |
| | C | -0.701463 | -0.685331 | 0.000000 |
| | F | 1.297883 | 0.492196 | 0.000000 |
| | F | -0.561098 | 1.609870 | 0.000000 |
| | F | -0.105646 | -1.868134 | 0.000000 |
| | H | -1.772692 | -0.698209 | 0.000000 |
| C ₂ F ₄ | C | 0.000000 | 0.000000 | 0.653496 |
| | C | 0.000000 | 0.000000 | -0.653496 |
| | F | 0.000000 | 1.089149 | 1.372397 |
| | F | 0.000000 | -1.089149 | 1.372397 |
| | F | 0.000000 | -1.089149 | -1.372397 |
| | F | 0.000000 | 1.089149 | -1.372397 |
| pyridine | N | 0.000000 | 0.000000 | 1.406386 |
| | C | 0.000000 | 0.000000 | -1.370656 |
| | C | 0.000000 | 1.130835 | 0.717752 |
| | C | 0.000000 | -1.130835 | 0.717752 |
| | C | 0.000000 | 1.185580 | -0.668930 |
| | C | 0.000000 | -1.185580 | -0.668930 |
| | H | 0.000000 | 0.000000 | -2.447849 |
| | H | 0.000000 | 2.043901 | 1.292092 |
| | H | 0.000000 | -2.043901 | 1.292092 |
| | H | 0.000000 | 2.136767 | -1.171486 |
| | H | 0.000000 | -2.136767 | -1.171486 |
| butadiene | C | -0.398970 | 0.608901 | 0.000000 |
| | C | 0.398970 | -0.608901 | 0.000000 |
| | C | 0.110840 | 1.831552 | 0.000000 |
| | C | -0.110840 | -1.831552 | 0.000000 |
| | H | -1.470979 | 0.480141 | 0.000000 |
| | H | 1.470979 | -0.480141 | 0.000000 |
| | H | -0.519536 | 2.703162 | 0.000000 |
| | H | 1.175866 | 1.998710 | 0.000000 |

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Table S2 – Continued from previous page

| Molecule | Atom | X | Y | Z |
|-----------|------|-----------|-----------|-----------|
| 1,3-CHD | H | 0.519536 | -2.703162 | 0.000000 |
| | H | -1.175866 | -1.998710 | 0.000000 |
| | C | -0.062973 | -1.412234 | 0.112250 |
| | C | -0.109351 | -0.723886 | 1.246213 |
| | C | 0.109351 | 0.723886 | 1.246213 |
| | C | 0.062973 | 1.412234 | 0.112250 |
| | C | -0.250597 | 0.720934 | -1.183391 |
| | C | 0.250597 | -0.720934 | -1.183391 |
| | H | -0.193550 | -2.481759 | 0.112811 |
| | H | -0.291282 | -1.218668 | 2.185505 |
| | H | 0.291282 | 1.218668 | 2.185505 |
| | H | 0.193550 | 2.481759 | 0.112811 |
| | H | -1.334657 | 0.731277 | -1.325298 |
| | H | 0.170929 | 1.264403 | -2.023448 |
| | H | -0.170929 | -1.264403 | -2.023448 |
| | H | 1.334657 | -0.731277 | -1.325298 |
| furan | O | 0.000000 | 0.000000 | 1.145633 |
| | C | 0.000000 | 1.083504 | 0.344768 |
| | C | 0.000000 | -1.083504 | 0.344768 |
| | C | 0.000000 | 0.716000 | -0.948558 |
| | C | 0.000000 | -0.716000 | -0.948558 |
| | H | 0.000000 | 2.032382 | 0.837737 |
| | H | 0.000000 | -2.032382 | 0.837737 |
| | H | 0.000000 | 1.368499 | -1.797526 |
| thiophene | H | 0.000000 | -1.368499 | -1.797526 |
| | S | 0.000000 | 0.000000 | 1.188266 |
| | C | 0.000000 | 1.231239 | -0.012168 |
| | C | 0.000000 | -1.231239 | -0.012168 |
| | C | 0.000000 | 0.712855 | -1.259714 |
| | C | 0.000000 | -0.712855 | -1.259714 |
| | H | 0.000000 | 2.263168 | 0.276152 |
| | H | 0.000000 | -2.263168 | 0.276152 |
| | H | 0.000000 | 1.312484 | -2.150984 |
| | H | 0.000000 | -1.312484 | -2.150984 |
| o-benzyne | C | 0.000000 | 0.698360 | -1.055387 |
| | C | 0.000000 | -0.698360 | -1.055387 |
| | C | 0.000000 | -1.437456 | 0.126485 |
| | C | 0.000000 | -0.629137 | 1.240399 |
| | C | 0.000000 | 0.629137 | 1.240399 |
| | C | 0.000000 | 1.437456 | 0.126485 |

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Table S2 – Continued from previous page

| Molecule | Atom | X | Y | Z |
|-----------|------|-----------|-----------|-----------|
| m-benzyne | H | 0.000000 | 1.218701 | -1.998760 |
| | H | 0.000000 | -1.218701 | -1.998760 |
| | H | 0.000000 | -2.512226 | 0.129780 |
| | H | 0.000000 | 2.512226 | 0.129780 |
| | C | 0.000000 | 1.183225 | -0.640532 |
| | C | 0.000000 | 0.000000 | -1.368871 |
| | C | 0.000000 | -1.183225 | -0.640532 |
| | C | 0.000000 | -1.089698 | 0.722157 |
| | C | 0.000000 | 0.000000 | 1.551632 |
| | C | 0.000000 | 1.089698 | 0.722157 |
| p-benzyne | H | 0.000000 | 2.143409 | -1.126034 |
| | H | 0.000000 | 0.000000 | -2.447286 |
| | H | 0.000000 | -2.143409 | -1.126034 |
| | H | 0.000000 | 0.000000 | 2.623290 |
| | C | 0.000000 | -1.335549 | 0.000000 |
| | C | 1.206179 | -0.705475 | 0.000000 |
| | C | 1.206179 | 0.705475 | 0.000000 |
| | C | 0.000000 | 1.335549 | 0.000000 |
| | C | -1.206179 | 0.705475 | 0.000000 |
| | C | -1.206179 | -0.705475 | 0.000000 |
| 1,8-NQ | H | 2.143716 | -1.233116 | 0.000000 |
| | H | 2.143716 | 1.233116 | 0.000000 |
| | H | -2.143716 | 1.233116 | 0.000000 |
| | H | -2.143716 | -1.233116 | 0.000000 |
| | C | 0.000000 | 2.433241 | -1.204923 |
| | C | 0.000000 | 1.212193 | -1.842835 |
| | C | 0.000000 | 0.000000 | -1.098520 |
| | C | 0.000000 | 0.000000 | 0.290566 |
| | C | 0.000000 | 1.272196 | 1.001592 |
| | C | 0.000000 | 2.469067 | 0.166741 |
| | H | 0.000000 | -1.161054 | -2.917752 |
| | H | 0.000000 | 3.344861 | -1.775637 |
| | H | 0.000000 | 1.161054 | -2.917752 |
| | C | 0.000000 | -1.212193 | -1.842835 |
| | C | 0.000000 | -1.272196 | 1.001592 |
| | H | 0.000000 | 3.402432 | 0.703047 |
| | C | 0.000000 | -2.469067 | 0.166741 |
| | C | 0.000000 | -2.433241 | -1.204923 |
| | H | 0.000000 | -3.402432 | 0.703047 |
| | H | 0.000000 | -3.344861 | -1.775637 |
| | O | 0.000000 | -1.409477 | 2.211344 |

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Table S2 – *Continued from previous page*

| Molecule | Atom | X | Y | Z |
|----------|------|----------|----------|----------|
| | O | 0.000000 | 1.409477 | 2.211344 |